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SCIENCE AND FEMINISM

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FEMINISM demands the removal of restrictions imposed on woman's activity. Opponents of feminism seek to justify these restrictions on two grounds: (1) because of undesirable social and ethical consequences that are believed to be the necessary outcome of their removal; (2) because of the alleged unfitness of women to undertake certain forms of activity. The considerations that come under the first head lie wholly outside the field of science; for what is socially or ethically desirable depends on the individual point of view assumed, and has nothing to do with the objective determination of fact that constitutes scientific judgment. At best social science might establish what consequences would actually flow from a removal of restrictions; but social science is at present far from being able to predict future events within its domain. Science, then, can deal only with the arguments of the second order, the question whether woman is by nature debarred from successfully following pursuits open to man, and the present paper is confined exclusively to this problem. It is true that some scientists have categorically affirmed woman's inferior equipment, notably Professor Sedgwick in a much-advertised statement in the *New York Times*. In so doing they have voiced folk-lore and folk-ethics rather than science. On the other hand, avowedly feminist literature has not been free from misrepresentation of the facts. The following pages are designed to fill the long-felt want of a concise popular summary of the present state of knowledge in regard to the question of woman's supposedly natural disabilities.

The widespread conviction of woman's inability in certain directions is in large measure due to the fact that, to the knowledge of those disqualifying her, she never works and never has worked in these directions; hence the desire on her part to perform such work appears "unnatural." This point of view is, of course, not a strictly logical one; for even if woman had been uniformly debarred from work along certain lines, this might have been due to special historical causes and not at all to her native endowment. The occupation of typist-stenographer is at present practically monopolized by women, while a few decades ago the corresponding secretarial positions were uniformly filled by men. Yet we do not attribute this fact to a change in the natural fitness of the sexes to perform the required work. Nevertheless, while the argument from universal exclusion would not be rigorously demonstrative, it must be

admitted that if women were *everywhere* shut out from a number of occupations open to men, regardless of racial and social differences, this would be fair *presumptive* evidence that woman is naturally less fit to undertake the tasks in question. Before making a direct comparison of the biological and psychological status of the sexes, we will therefore try to determine woman's sphere in different forms of society.

Woman's Sphere in Different Cultures.—Unfortunately this particular problem has been obscured by feminists as much as by any of their opponents. Among many adherents of woman's cause, there is a firm belief that all mankind at one time passed through a stage of society called "the matriarchate," in which women ruled supreme and men played the second fiddle. Only at a later period men are supposed to have risen to the ascendancy, hence, it is argued, the inferior position of woman in modern times is not rooted in sexual differences, but results from man's social position of vantage.

A correct conclusion should never be bolstered up by erroneous reasoning; and in the present instance the argument is scientifically worthless, because no satisfactory evidence of a general matriarchate condition has ever been advanced. The following are the facts: A great many primitive peoples of the world reckon kinship either exclusively through the mother or exclusively through the father; the matrilineal kin group being commonly called (by American ethnologists) a "clan," the patrilineal kin group a "gens." However, there are also not a few tribes without either clans or gentes; and in many cases there is not a shred of evidence for the view that the gentes were ever preceded by a clan system. Thus, it can not be regarded as a fact that the matrilineal clan represents a once universal stage of social development. But, even if it did, this would be very different from asserting a matriarchal stage. To trace descent through the mother is one thing; to yield social prerogatives to woman is a very different thing. Thus, we find a well-developed system of maternal descent among the coastal tribes of British Columbia, but though a man inherits his mother's clan name and his maternal uncle's property, women play an altogether subordinate part in the tribal life. It is true that instances may be cited on the other side: among the Iroquois, in particular, there is not only descent through the mother, but something approaching a matriarchate, *i. e.*, a far-reaching influence of women on the conduct of social and political affairs. Such examples, however, are decidedly rare; as a rule, whether in North America, Australia or other areas, the matrilineal system is *not* coupled with matriarchal privileges.

The really important question is, what has been the field of woman's activity in different times and regions? The care of the children devolves on her from biological necessity. This task and her inferior muscular powers would keep her from war and the chase. Are there any further restrictions which the consensus of human societies has de-

clared as inherent in sex? The answer of ethnology seems to be a clearly negative one. In every tribe there is indeed a division of labor between the sexes over and above what seems determined by the demands of infants and the differences in physical strength. But the types of activity associated with woman and man differ from tribe to tribe. Among the Hopi all the weaving was done by men, while among the Navajo, who are supposed to have learned the art from the Hopi, its practise fell to the woman's share. In North America the shaping of earthenware vessels seems to be a feminine pursuit; but in some sections of Africa men function as potters. It is not *a priori* obvious why the tanning of skins should be executed by women among the Redskins; why agriculture is the work of men among the Pueblo and of women among the Iroquois Indians; why the realistic painting of Plains Indian robes should be done by men; while the geometrical painting of rawhide bags is a prerogative of woman.

Without going into further detail, we may safely state that almost everywhere woman's contribution to culture is an important one. So far from being confined to the activities currently associated with the household, she often plays a most important part in the economic life, and practises indispensable tribal arts and industries. It is indeed true that these activities do not involve so sharp a separation from the household work as would result in modern conditions. An African agriculturist can ply her hoe with a child on her back; an Indian tanner may scrape and smoke hides, plait baskets and embroider quillwork in the intervals of domestic duties. But for our present purpose this fact is irrelevant. We are concerned with determining whether there are fields of work that woman should be debarred from for reasons of natural unfitness. What we actually find is that the work assigned to woman (beyond the obvious biological duties) is a matter of social custom, due doubtless in each particular case to specific historical causes. Ethnological evidence does not permit us to say that it is natural for women to exercise political functions as among the Iroquois, or to be rigidly excluded from tribal activity as in Melanesia and Australia; it does not prove that women are naturally more or less fit to be potters, weavers, tanners, gardeners, artists, poets or what not. It merely indicates in different communities considerable differences in the apportionment of modes of employment between the sexes. It does not justify the theory that the apportionment that had developed in our own civilization until the most recent times represents the one natural division of labor. If that conventional restriction of feminine activity is a natural one, proof must be given on other than ethnological grounds.

Biological Status.—Let us then turn to a direct comparison of woman's and man's biological and psychological status. Is woman by virtue of her organization anatomically and mentally in any way an inferior being?

As late as 1884, Paul Albrechts attempted to establish the "greater bestiality of woman from an anatomical point of view" by showing that in no less than nine points she approached more nearly to "our wild ancestors." In the tenth edition of Ploss and Bartels' "Das Weib"¹ Professor Paul Bartels exposes the absurdity of this view (p. 6). Of Albrechts's nine propositions, four are either erroneous or doubtful, one irrelevant, the remainder of no importance for the problem at issue. "The entire question," concludes Professor Bartels, "is wrongly put; it is, in my opinion, idle to debate, which of the two sexes of a single class of mammals is of 'lower' rank; moreover, we could, if we so desired, urge the more powerful masticatory apparatus of man, or, following O. Schultze, his larger face in proof of the contrary assertion." Professor Schultze, who emphasizes the relatively childlike character of woman, is indeed careful to refrain from drawing the inference that for this reason man is anatomically superior. It is true that woman, like the new-born infant, has a relatively long trunk, short legs and a rather large head, but, as Schultze points out, any argument for inferiority on such grounds proves a two-edged sword: for, by virtue of his longer extremities and smaller head, man approaches the ape type in greater measure than does his mate.² Schultze, who is by no means an adherent of feminism, arrives at the general conclusion that man and woman are fundamentally different organisms, but of equal biological perfection. This is likewise Bartels's summing up of the situation.³ The fact that these authors nevertheless contend for a differentiation of function because of the anatomical differences need not concern us in this connection.

One point that continues to be urged with much insistency and much lack of intelligence is the inferior size of woman's brain, for in the popular mind intellect and brain weight are closely associated. It is therefore worth while to consider this subject at somewhat greater length.

It is true that the *absolute* weight of man's brain is greater than woman's in every people among whom the comparison has been made. Thus, a large series of English brains shows an average of 1325 g. for the males and of 1,183 for the females; while in a Saxon series male and female brains average 1,355 and 1,223, respectively. A corresponding result is obtained when the brains are compared for cubic capacity rather than for weight: a Bavarian series of 100 male, and an equal number of female, brains yielded average capacities of 1,503 and 1,335 c.c., respectively. In short, the *absolute* size of man's brain does exceed that of woman.⁴

However, it is equally true that the absolute size of an elephant's or

¹ Leipzig, 1913.

² "Das Weib in anthropologischer Betrachtung," Würzburg, 1906, p. 20 f.

³ *Op. cit.*, p. 55.

⁴ See Bartels, *op. cit.*, pp. 34-35.

whale's brain considerably exceeds that of the male human brain, the weight of the elephant's being from 4,100 to 4,800 g., and that of the whale from 1,900 to 2,800 g. Hence it would seem rash to attach much importance to absolute brain size in comparing male and female intelligence. This skepticism is supported by the individual differences in the brain weight of men as compared with concomitant individual differences in intellect. While it is true that distinguished men often have a brain of more than average size, this is by no means uniformly the case. Noted scientists have been known to fall appreciably below the mean, while persons of moderate ability have turned out to possess enormous brains. In Waldeyer's series the two extremes, 900 and 2,000 g., were found to belong to two mentally quite normal men.

Abandoning the comparison on this basis, we may investigate the *relative* brain weights, *i. e.*, the weight of the brain in relation to the total weight of the body. But here we get the result that woman has a relatively larger brain than man. While the ratio of male and female body weight is as 100 : 83, the brain weights stand in the ratio of 100 : 90. Schultze has calculated the proportion of brain and body weight in man and woman according to the determination of various scholars, and finds a uniform difference in favor of woman. Thus, Schwalbe sets man's average brain weight at 1,375 g., woman's at 1,245 g.; and man's total weight at 65,000 g., and woman's at 55,000 g. This yields a proportion of 1 : 47.47 for man and of 1 : 44.17 for woman.

Can we legitimately infer from these undoubted facts that woman is intellectually superior to man? Hardly, if we draw upon corresponding data from the animal kingdom at large. For then we discover that the human species as a whole is surpassed by the rat, that the mole occupies an intermediate position between man and woman, and that the elephant has a very small relative brain weight. The comparison on this basis is not wholly worthless, for we find that of equally heavy animals the biologically higher type has a relatively heavier brain, and that of two closely related and presumably equally intelligent animals (such as the lion and the cat) the smaller invariably has a greater relative brain weight. It has been suggested with some plausibility that woman's superior relative brain weight is an illustration of the general rule last-mentioned.

What conclusion, then, can be drawn from the facts of brain weight as to the superior mental organization of either sex? Obviously, the only sane inference is that such superiority on either side is quite unproved. Some correlation between brain and intelligence undoubtedly exists; but not in the sense that the size of the brain fully determines intelligence. Bartels's summing up of the situation seems the only warrantable one: so far as we can infer anything from the brain weight of man and woman there is presumably equality of mental ability.⁵

⁵ Plotz-Bartels, *op. cit.*, p. 48.

The Psychological Data.—Let us now turn to the argument from psychology. Formerly it was held by men of science and laymen alike that women were mentally inferior to men, on the average; that if the mental abilities of all men and of all women could be averaged separately the result would show a great advantage in favor of men. Exact experiment and class-room experience, however, have led many men of science to abandon the hypothesis that women are on the average mentally inferior to men.

It should be noted that the laboratory experiments purporting to establish sex differences are frequently without bearing on the question of differences in the higher mental processes, and that perfect correlation between efficiency in laboratory tests and efficiency in normal pursuits has not been established. Indeed, Heymans, a careful and conscientious thinker, in his monograph on feminine psychology⁶ falls back almost entirely on the direct estimates of university professors as to their men and women students. To be sure, his informants, on the whole, support the time-honored view that women are more industrious, but lack creative power and independence of thought, yet, as Heymans himself recognizes, these judgments may have been largely affected by the judges' initial bias. That this is indeed so is suggested by a comparison of equally offhand judgments by various scholars not cited by Heymans. Thus, Paul Bartels⁷ is convinced that the average woman is as competent as the average man, whether at the chessboard or in politics, in science or at the stock exchange, or wherever else in life activity depends predominantly on the intellect. Her great inferiority appears, according to this writer, where efficiency is the result of a well-developed personality: she fails as a leader of crowds or captain of a ship, in poetry, as a physician, as a teacher and leader of boys, etc. In striking contrast to this view stands that of Forel, who considers women and men on a par emotionally, men superior intellectually, and women superior in point of volition. In the face of such disagreement, we may well doubt whether the time has come for a definite statement as to the psychological equipment of woman as compared to man. To revert to the method employed by Heymans, it is interesting to note that a number of American professors who have answered Professor Sedgwick's article in the *New York Times* find no inferiority on the part of their female students. The general change of attitude noticeable on this subject in academic circles gives at least presumptive evidence to the effect that the older opinion was a doctrine of more or less rationalized folk-belief without adequate foundation in fact.

Nevertheless, it is true that woman's intellectual achievement as recorded in history has been inferior, and even scholars who admit the

⁶ "Die Psychologie der Frau."

⁷ *L. c.*, p. 48.

equality of man's and woman's intellectual endowment now seek to explain this fact on the score of alleged greater male variability.

About a century ago the anatomist Meckel in his "Manual of Descriptive and Pathological Anatomy" concluded on pathological grounds that the human female was more variable than the human male; and he thought that, "since woman is the inferior animal, and variation a sign of inferiority, the conclusion is justified." Later, when variability came to be regarded as a sign of superiority and as a trait affording the greatest hope for progress, anatomists and naturalists arrived at the conclusion that the male is more variable. Men of science who had gone so far as to take the stand that women are *on the average* equally able with men, now inferred from the alleged greater anatomical variability of males that males must also be mentally more variable, and declared women's failure in intellectual achievement to be due to this fact.

Unfortunately for this theory of inherently greater male variability, however, there appears to be no support for it in precise data. Karl Pearson, in his "Variation in Man and Woman" (1897), showed that when anatomical measurements of adults are treated with proper statistical precision, "there is no evidence of greater male variability, but rather of a slightly greater female variability." More recently Montague and Hollingworth⁸ have shown from a study of 2,000 newborn infants that there is no demonstrable difference in variability between the sexes at birth. As for mental variability, the precise data at present available have been summed up by Leta S. Hollingworth⁹ in a critique recently published. No proof of greater male variability in mental traits can be found in the scant and inconclusive data available on the subject. The theory exists, but the evidence does not.

Yet it is possible to admit equal endowment and equal variability and still to regard as impossible equal achievement on the part of woman. The traditions and tales of savages are replete with the primitive superstitions that center round the functional periodicity of women. And the literature of the nineteenth and twentieth centuries is replete with dogmatic assertions respecting the same subject. A long and patient search through this literature brings to light a veritable mass of conflicting statements by men of science, misogynists, practitioners, and general writers as to the dire effects of periodicity on the mental and physical life of women; but the search reveals scarcely a single fact upon which the earnest, but critical, seeker after truth can lay his hand and say, "Here is a point established." Men eminent in their professions are found announcing the most dogmatic and contradictory notions. Unfortunately for the scientifically minded, they fail, for the most part, to give any hint of the methods by which they arrive at their

⁸ Helen Montague and Leta S. Hollingworth, "The Comparative Variability of the Sexes at Birth," *Amer. Jour. of Sociology*, 1914.

⁹ Leta S. Hollingworth, "Variability as Related to Sex Differences in Achievement," *Amer. Jour. Sociology*, 1914.

conclusions, usually prefacing their remarks merely with the convenient phrase, "It is very well known." It is certain, at all events, that they did not arrive at their conclusions by introspection; and it scarcely seems likely that much trustworthy information will be accessible on this subject till women have prosecuted their own researches into it. As in the case of variability, the most recent and thorough study, in fact the only precise study, made as to the effects of school work on the periodic function fails utterly to confirm theory. A. E. Arnold,¹⁰ who made the study, announces as his conclusion, after closely following up the records of over 1,000 women over eighteen years of age during two years of college work, that "all effects thus far observed have been in the direction of improvement."

It is amusing to note how every sex difference that has been discovered or alleged has been interpreted to show the superiority of males. When students of institutional statistics discovered that there are more males among inmates of idiot asylums, and supposed this to mean that there must be more males than females among the feeble-minded, this apparently unfavorable fact was at once interpreted as confirmatory evidence of greater male variability; and as such it became immediately favorable to the theory of male superiority. Had it been found that there were more females among inmates of idiot asylums, how easily it could have been used as evidence of the general inferior quality of female mind.

Conclusion.—We may now sum up the argument as follows: The restrictions of woman's sphere on the ground that certain occupations are not *natural* for woman because they are not customary feminine occupations in modern civilization, rests on sheer ignorance of history and ethnology, which reveal a very considerable range of activity under varying social conditions. Anatomically, it may definitely be stated that both sexes occupy the same level. A comparison of male and female brains fails to establish the superiority of either sex. With the removal of folk-psychological prejudices, and with the advance of psychological experiment, a corresponding conclusion is gaining ground as to the average mental equipment. And while the scarcity of female geniuses, and corresponding infrequency of epoch-making achievement, has been attributed to greater male variability, a sex difference in variability has never been scientifically demonstrated. Finally, the hackneyed objection, that women are unable to perform work with male efficiency because of their catamenial function, appears as pure dogma. The verdict of present-day science is thus an uncompromisingly negative one: no rational grounds have yet been established that should lead to artificial limitation of woman's activity on the ground of inferior efficiency.

¹⁰ "The Effects of School Work on Menstruation," *Amer. Phys. Ed. Rev.*, 1914.